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ABSTRACT

The role of vocational education and training (VET) in the context of the dynamic and changing demands of the world of work is explored through a more comprehensive approach to the overall system of human resources development (HRD). HRD is the concern of both educationists and economists. To an educationist, HRD should first be human and then professional. An economist would emphasize the need for as accurate a matching of supply and demand in educational and labor market planning as possible. Labor market planners are frequently faced with the dilemma of whether to sacrifice some individual aspirations and social ideals to ensure the adequacy of labor supply or to sacrifice the fulfillment of some economic needs the better to respond to individual claims and social pressures. Three main systems exist in practice in VET as a component of HRD frameworks and institutions: the school system, the enterprise (on-the-job) system, and the integrated (dual) system. One or more such systems might exist in a country. Three main criteria for evaluation of VET programs are linked with varying degrees to the criteria and changing demands of the world of work: internal, economic, and external evaluation. The role of the world of work, represented by the various types of enterprises in VET, is explored through four main functions: planning, financing, implementation, and identification of training needs. (YLB)

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VOCATIONAL EDUCATION

AND

THE CHANGING DEMAND OF THE WORLD OF WORK

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Keynote Address for the UNESCO-UNEVOC International Conference on "Vocational Education in the Asia – Pacific Region", held in Adelaide Institute of TAFE – South Australia, 25-27 March 1998.

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Vocational Education and the Changing Demand of the World of Work

I. Introduction

The role of vocational education in the context of the dynamics and changing demand of the world of work can better be explored through a more comprehensive approach to the overall system of human resources development (HRD).

Human resources development, which is mainly implemented through the formal and non-formal systems of education, is the concern of both educationists and economists. This is so because education is recognized both as a social service on the one hand, and an investment and hence economically feasible activity on the other. The existence of a link between education and economic development is mainly the result of humanpower needs being translated into educational targets and plans.

The relation between education and economic development is a complex one, because there exists no strict relationship between occupations and levels or types of education. Consequently, the ability and need to design manpower preparation and development systems based rigidly on the needs of employment requirements are questionable. The complexity of the rela'ionship between education and economics is also due to the fact that ducation can be both a cause and effect of economic development. This applies in particular to vocational education and training (VET), whose quality, size, standards and diversification of offerings promote economic development on the one hand, and are strongly influenced by such development and by work standards on the other. Therefore in manpower planning, which requires, among other things, the matching of supply and demand, such matching should emphasize interdependence, rather than dependence or independence, as a basic strategy.

Figure (1) shows the position of Human Resources Development and Utilization Systems in general, and VET in particular, vis-à-vis the systems of manpower supply, manpower demand, and the supply-demand inerlinkages, within the relevant social, economic and cultural framework.

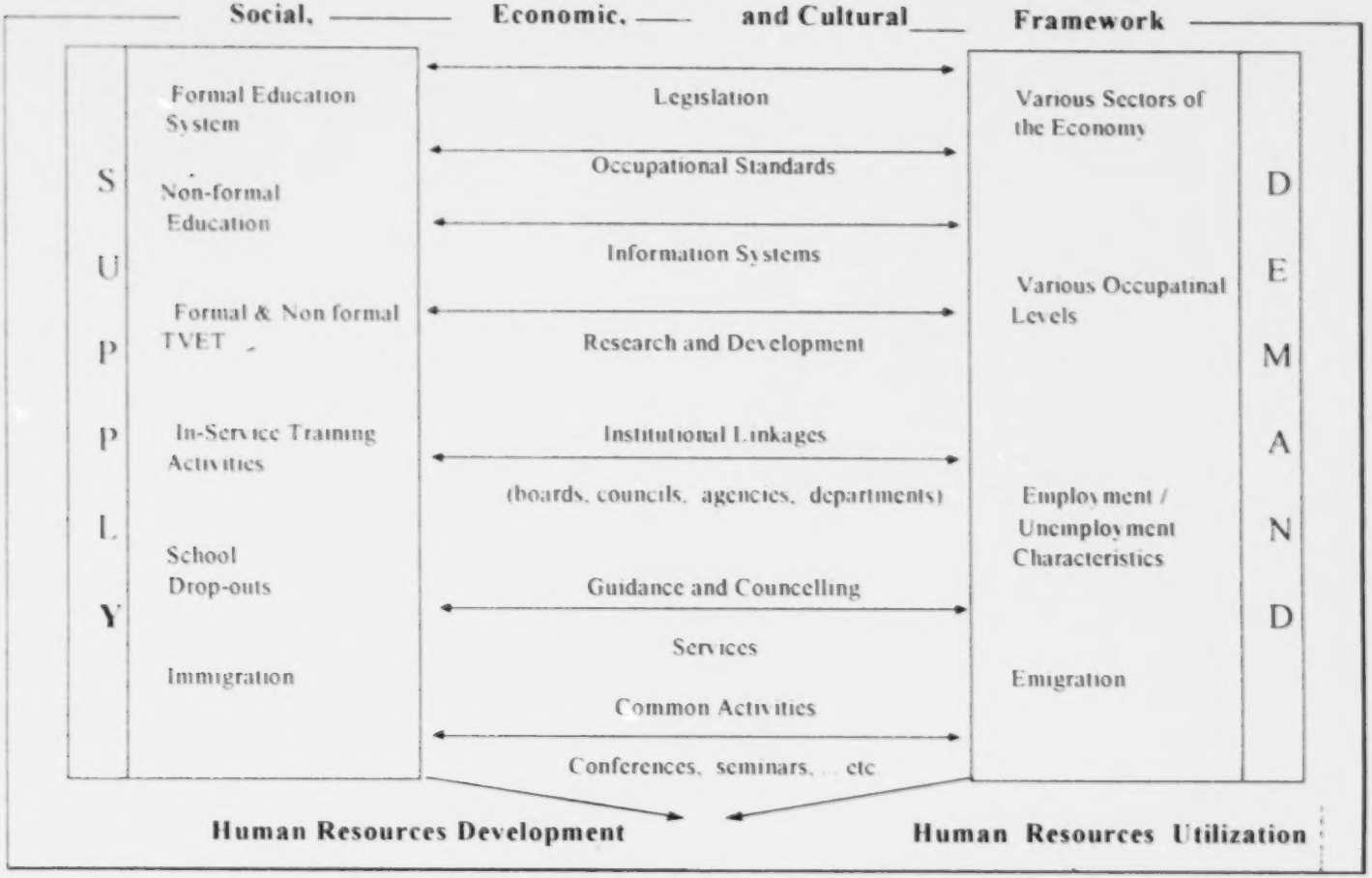

Figure 1 : Human Resources Development and Utilization Systems

The criteria used for the evaluation of educational and HRD strategies and systems frequently reveal the differences in the views of economists and educationists. Thus the feasibility of a VET system can be assessed through the ability to secure employment, level of earnings, self and social image, job satisfaction, and the degree of lateral and upward mobility on the individual level; and through productivity levels, quality standards and national income figures on the national level. It is difficult, for example, to justify high investment in a VET scheme that tends to accentuate unemployment in certain occupational fields and levels and labour shortage in others; or that leads to unplanned and harmful migration of manpower from rural to urban areas. On the other hand, one should have reservations against VET schemes that tend to prepare a skilled rather than an educated labour force, or that do not enhance the status of work and inculcate positive attitudes towards labour.

To an educationist, HRD, mainly through formal and non-formal education and training, should first be human and then professional, since such education and training should do more than provide the learner with the skills and knowledge specifically needed for his job, and since occupations are more effectively performed by individuals who are generally, as well as specifically, prepared. In the field of vocational and technical education, individuals should be prepared to be intelligent users of the means of production rather than mere means of production. An economist, on the other hand, would emphasize the need for as accurate a matching of supply and demand in educational and manpower planning as possible, and would in general be sensitive to the 'marketability' of the 'products' of the education system. Poorly balanced education systems, to an economist, are a waste of resources that are usually badly needed elsewhere. Vocational and career guidance, from the point of view of economists, therefore, is oriented more to the fulfillment of market needs and the adjustment of learners' inclinations to such needs, than to the discovery of their abilities and inclinations and the realization of their potentials and educationally justified ambitions.

Planners, are in general frequently faced with the dilemma of whether to sacrifice some of the individual aspirations and social ideals to

ensure the adequacy of manpower supply, or to sacrifice the fulfillment of some of the economic needs to better respond to individual claims and social pressures.

They are on the other hand, faced with many questions. To what extent should education be deployed for the requirements of development plans, and hence to what extent should education be planned and controlled? At what stage should specialization through vocational education and training (VET) commence? How broad-based or how narrow-based, and hence what are the components, of any educational programme, especially in VET schemes? What is the role of industry, and the enterprise in general, in VET?

II. Occupational Levels and Educational Outputs

Every occupation comprises a great number of functions, tasks and skills performed by individuals of varying performance, ability and degree of responsibility, thus requiring different occupational and skill levels as part of the more comprehensive 'division of labour' concept. In practice the skill ladder is usually divided into 'bands' to simplify the process of classification, the hierarchy of responsibility, and the design of humanpower development programmes.

Figure (2) shows a diagrammatic representation of one of the well-known systems of occupational levels and the relation with the outputs of the various educational levels.

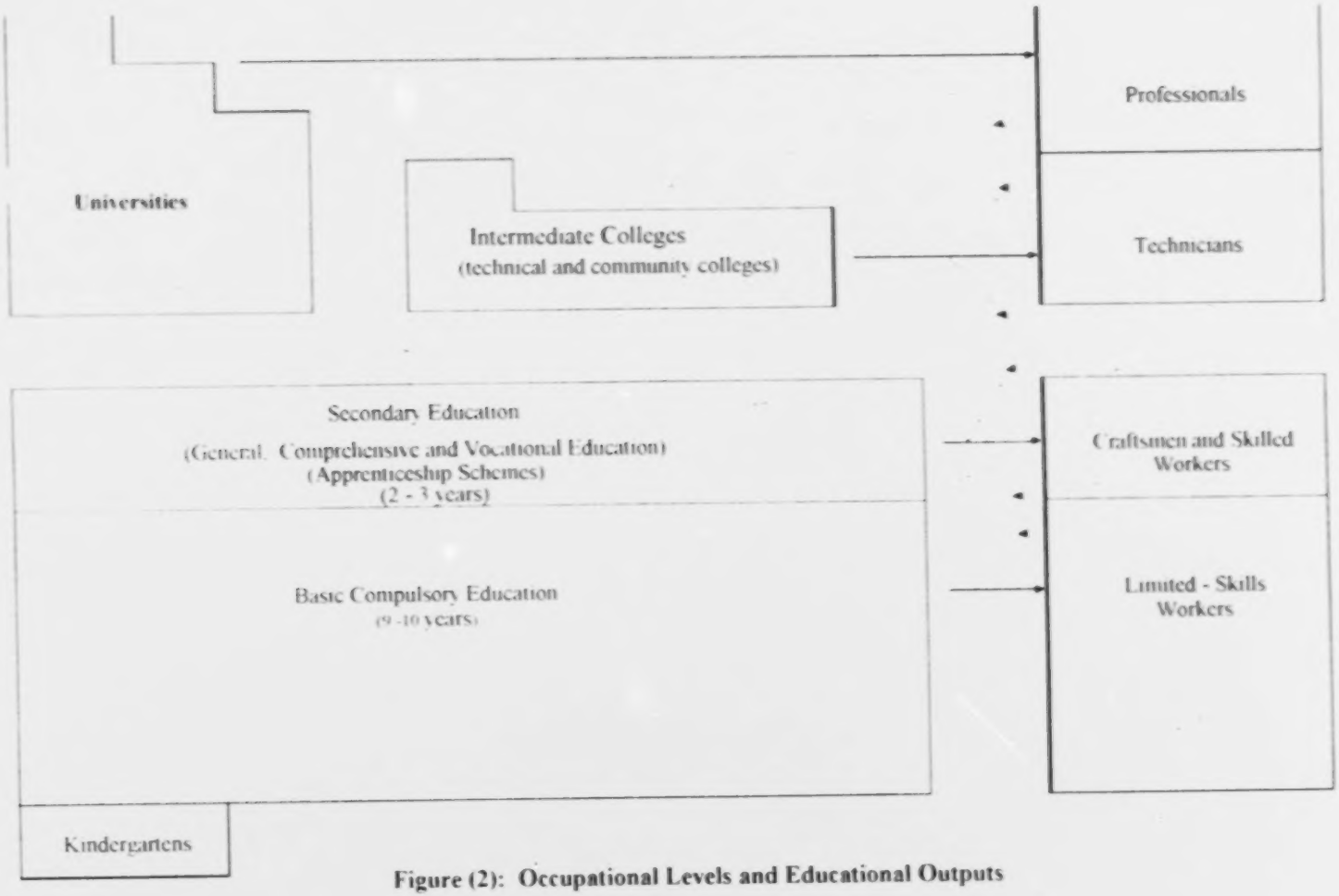

Figure (2): Occupational Levels and Educational Outputs

Occupational levels at the top of the skill ladder include professionals and technicians (sub-professionals) who are usually prepared in tertiary level educational institutions; while occupational levels at the base of the skill ladder comprise skilled workers and craftsmen prepared frequently within secondary education or parallel to it. A professional or specialist is in general, prepared in educational institutes of university level. A sub-professional or technician, on the other hand, is prepared usually in educational institutes of sub-university, but within the tertiary, level of education such as community and technical colleges. The basic occupational levels, which comprise various categories of craftsmen, skilled workers and limited-skills workers, are not usually defined internationally in terms of the required educational levels as is the case with upper occupational levels of professionals and technicians. Different countries have different standards, educational backgrounds and systems of manpower preparation at the basic occupational levels, although it is becoming more and more accepted that such levels lie at least within the senior stage of secondary education or parallel to it, inside or outside the formal education system.

Occupational classifications and standards within the various occupational levels is an area that has important reflections on both the development and utilization aspects of humanpower. Employers should be full partners in the initiation, development and implementation of the relevant activities. Apart from the fact that such classifications and standards should emanate from the changing demand of the world of work, they have direct influence on such matters as wage structures, labour mobility and performance standards of the labour force.

It is worthwhile noting here that the traditional pyramid-like distribution of the labour force among the various occupational levels is gradually being replaced by an ellipse-like distribution in modern economies, as illustrated in Figure (3). A big deficit or surplus at the higher occupational levels can be as much a source of imbalance and economic weakness as a similar deficit or surplus at the basic occupational levels.

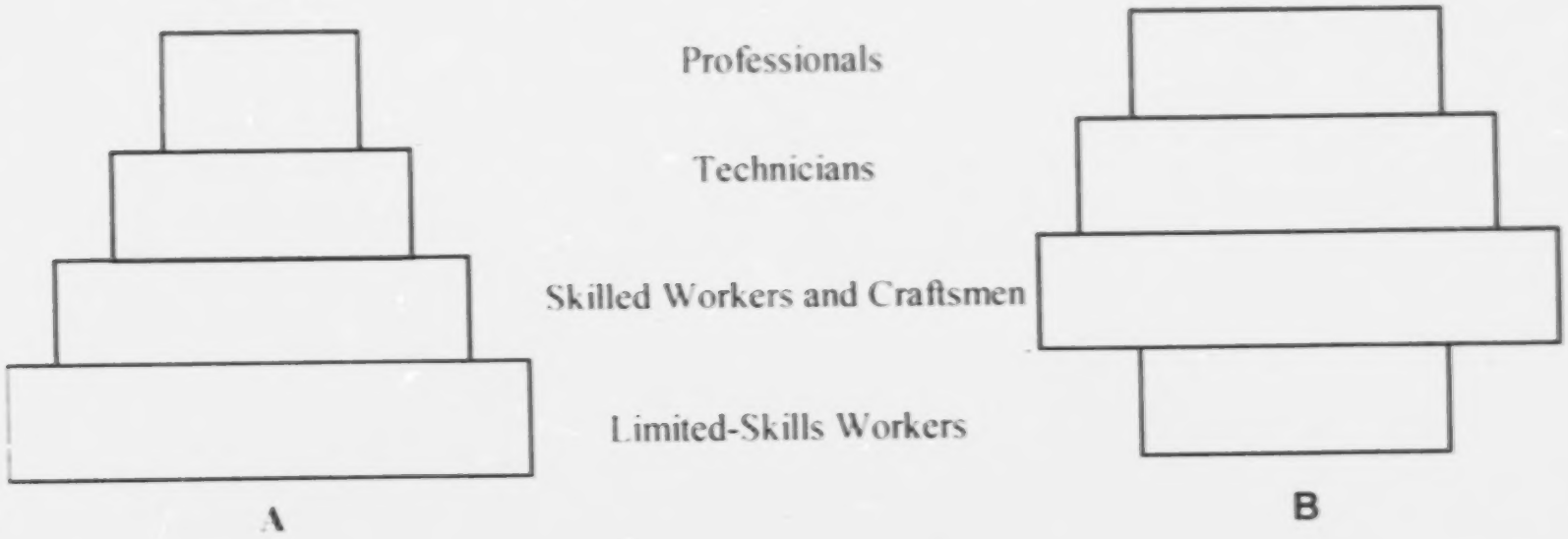

Figure (3) : Occupational Levels and Labour Force Distribution

A: Pyramid-like distribution.

B: Ellipse-like distribution

III. Systems of Vocational Education and Training (VET).

Three main systems exist in practice for VET as a component of HRD frameworks and institutions. One or more of such systems might exist in any one country. These systems are:

(i) The school system

The school system for VET is usually implemented in formal educational institutions. The trainee, who is thus a student in a vocational school or training centre, acquires his vocational preparation through some approved formal programmes in the educational institution itself, with little or no direct contact with the world of work. The relevant programmes consist usually of general and specialized theoretical components, in addition to the practical component which is implemented almost exclusively in special workshops and laboratories attached to the school. Nevertheless, it is not unusual for a school system to develop some useful links with the world of work. Such links could incorporate training standards, and an element of on-the-job training.

(ii) The enterprise (on-the-job) system

The enterprise system is implemented on-the-job at the work place and employers' premises. The trainee, who is thus either a full-fledged worker or under special contract, acquires his vocational preparation on-the-job, with emphasis being placed on the practical skills component. Enterprise systems vary between informal traditional apprenticeship schemes on one end, and well-structured apprenticeship schemes on the other end.

(iii) The integrated (dual) system

The integrated or dual system for VET combines both the school and the enterprise systems. The implementation takes place partially in educational institutions and partially in enterprises, with full coordination. The role of the educational institution comprises usually the theoretical instruction component which might include a general education element in addition to the specialized element. In some schemes, the educational institution provides some

elements of the practical skills needed, especially basic non-specialized and back-up skills that cannot be provided by the relevant enterprise. The role of the enterprise, on the other hand, comprises basically all or most of the practical training component, especially for the specialized parts of it. The involvement of employers within the dual system could incorporate, in addition to the provision of training facilities, the appointment of full or part-time instructors; and the payment of apprenticeship wages to the trainees.

The training programme, including the detailed contents and certification is usually drawn up through full coordination between the concerned parties, although the relevant training standards are expected to be drawn up by the enterprise.

Formal apprenticeship schemes with a substantial off-the-job element is the usual model for dual systems. In such systems, the trainee is, in practice, a worker under training and a student in an educational institution at the same time. In the case of large enterprises, the off-the-job educational facilities can be provided at the employers' premises.

The question of whether vocational preparation should be the responsibility of the education system or that of the enterprise is a major issue, especially in developing countries If vocational, and hence manpower, preparation is interpreted broadly to comprise any type and level of education and training made available to the individual to prepare him for his future vocation, then most, if not all, of higher education at the professional and sub-professional levels in universities and technician institutes can be classified as vocational preparation. But at these higher occupational levels, the predominant responsibility of the education system is taken for granted; although, in some countries, technician education in particular is a shared responsibility. Therefore, it is vocational education and training for the preparation of skilled workers and craftsmen at the basic occupational levels that is contested in practice between the school and the enterprise.

Those who support a school-based model of manpower preparation at the basic occupational levels require that the education system should

be responsible for policy-making, planning and overall content specification and criteria. The rationale for such an approach stems from the view that education is an activity intended for the development of the individual and, thus, encompasses both general and vocational education. Such a view assumes that the enterprise is unable to take overall responsibility for manpower preparation without running the risk that one-sided narrow economic criteria will govern the various aspects of the training programme, including its objectives, content, standards and quality.

The supporters of an enterprise-based model of manpower preparation at the basic occupational levels believe that, because such preparation is mainly connected with the requirements of the enterprise, it should have little place in the school. The scope of responsibilities of the enterprise in this case includes policy-making, planning, standards setting and content specification. Industry-based vocational preparation schemes are, in general, more economical than school-based ones. This is because productive work can more readily be undertaken by trainees, and because of the possibility of utilizing existing facilities, at least partially, instead of establishing new ones. But a major consideration in this respect is the fact that the greater part of the training cost is usually distributed among employers. It is usually argued in support of the enterprise approach that, at the basic occupational levels, the training needs of industry can more effectively be responded to through in-plant training because of its relevance, flexibility, cost effectiveness and ability to offer smooth transition to work. In practice, the school system is often at a disadvantage when new specific training needs emerge, and frequently runs the risk of a mismatch between its output and employment requirements.

In many countries, two separate systems of vocational preparation at the basic occupational levels exist side by side; one is school based and the other is enterprise based. This can partially be attributed in developing countries to the fact that industrial development is rather new and partial. Formal in-plant vocational preparation is thus a newcomer, while a traditional school-based system would have been in existence for some time. The introduction of the in-plant system is usually facilitated

by the expanding needs of new industrial developments and the inability of the education system to respond effectively both quantitatively and qualitatively. One of the main shortcomings in this case is that the two systems usually exist and develop without effective coordination and, sometimes, even with mistrust and rivalry.

IV. Evaluation of Vocational Education and Training Programmes

Three main criteria exist for the evaluation of VET programmes. As will be seen, such criteria are linked with varying degrees to the criteria and changing demands of the world of work:

(i) Internal Evaluation

The internal evaluation of VET programmes is generally concerned with assessing the degree of compatibility between the outputs of such programmes and the performance objectives already set out for them. Such evaluation can be implemented through various measures, including the assessment of:

- trainee performance and achievement.
- trainer proficiency and performance.
- training programme.
- training facilities.

Internal evaluation has an indirect link with the world of work, and can be isolated from it. Nevertheless, such a link can be strengthened through the involvement of employers in the assessment of the various elements covered by internal evaluation.

(ii) Economic Evaluation

The economic evaluation of VET programmes can be considered part of the internal evaluation of such programmes. It is concerned mainly with the assessment of such indicators as:

- efficiency of utilization of training facilities.
- cost-benefit rates.
- lost income by the trainee during the training period.
- extra income gained by the trainee, that is attributed to the training programme.

- comparative studies related to the cost of different VET systems.
- the rise in productivity at the work place, that can be attributed to the training programme.

As in the case of internal evaluation, most elements of the economic evaluation of VT programmes have an indirect link with the world of work, although an element like the influence of VET programmes on productivity has a direct link with the work place.

(iii) External Evaluation

Unlike the internal and economic kinds of evaluation which are inherently inward looking, the external evaluation of VET programmes is outward looking, as it is basically concerned with assessing the degree of compatibility between the relevant programme, including its performance, objectives and outputs, on the one hand; and employment requirements and work needs on the other. External evaluation is especially important in the case of school systems which usually run the risk of loosing contact with the world of work. It can be implemented through various measures, including the assessment of :

- results of follow-up studies on graduates.
- employment-unemployment characteristics of graduates.
- the time lag, if any, between the completion of training and joining employment.
- wage structures.
- adaptation time needed to assume full production status.
- the size and type of special and initiation training that should be provided by the employer.
- feedback information from employers.
- feedback information from employed graduates.
- productivity and work standards.

It is clear that a direct link exists between the external evaluation of VET programmes and the world of work. In fact, such evaluation is rooted in the needs and requirements of the world of work.

It is worthwhile noting that a comprehensive assessment of VET programmes takes into consideration all three kinds of evaluation, especially that a positive outcome of one kind does not necessarily indicate that a similar outcome can be expected from the other two kinds.

V. The Role of The World of Work in VET

The role of the world of work, represented by the various types of enterprises in vocational education and training can be explored through four main functions: planning, financing, implementation, and identification of training needs.

The following is a brief discussion of each of these functions.

VI. The Planning Function

The quality and efficiency of VET systems depend, to a great extent, on the quality of planning for such systems. The credibility and effectiveness of the planning function, on the other hand, is closely related to the involvement of all the concerned agencies, not the least of which are the employers whose enterprises are the main target for VET programmes. The involvement of the private sector in the planning function for VET can assume many forms, and can be realized through different measures. These include:

i. Legislation

Laws, by-laws and regulations in such fields as labour, employment, education and human resources development, can be utilized to provide the legislative umbrella and legal framework for defining the role of the world of work in the planning for HRD in general, and for VET in particular.

ii. Institutional Frameworks

The involvement of the private sector in the institutional setups related to the planning for VET can be secured through active and full-fledged participation of employers' representatives in the relevant boards, councils, commissions and committees responsible for the planning and supervision functions at the

institution and local levels, as well as on the systems and national levels.

iii. Curriculum Development

Employers' participation in curriculum development for VET systems and programmes is an important aspect of the private sector involvement in the planning function. Through such participation, the employment and labour market needs of the various VET programmes can rationally be taken into consideration.

iv. Information Systems

The availability of effective information systems is essential for the provision of the necessary database needed for planning activities. Information systems in this case should cover both the supply and demand sides of humanpower. The quantitative and qualitative aspects of human power and training needs of the various economic sectors are the major components in such database, which can be secured through full coordination and cooperation between the world of work and the relevant public and private sector agencies.

VII. The Financing Function

Practices vary considerably between countries as to the sources and means of funding for VET systems and programmes. In general, VET can be funded through four main sources:

i. Taxpayers

Funding from the taxpayers through the state budget is an option which is sometimes resorted to when VET is viewed as a national responsibility which should be shouldered by the whole population according to the income level of the various cohorts.

This source of funding is common in many countries, especially in developing countries; and is usually utilized to finance school systems of VET. It has the disadvantage

sometimes of being inadequate, especially in countries with limited resources, because it is not given due priority in national budgets.

ii. **Employers**

Funding of VET from industry and business in the private sector is an option that gains credibility when VET is viewed as an activity earmarked for the direct benefit of employers. Apprenticeship schemes, on-the-job training, and dual systems of training are examples of VET schemes that are usually funded, totally or partially, by employers. In addition to paying the wages of trainees and apprentices, employers' financial responsibilities include the provision of training facilities and paying the wages of instructors and training officers. In some cases, a special tax or training levy is applied on industrial and business enterprises to secure funding for national VET systems.

iii. **Beneficiaries**

According to this funding option, the learners, trainees and their families, who are considered the main beneficiaries of the relevant VET services on the individual level, are expected to meet the costs, totally or partially. Training fees, acceptance of reduced wages, and involvement in productive activities, are some of the practices that lead to the involvement of trainees in the funding of VET.

When VET is utilized for the preparation and training of skilled workers and craftsmen at the basic occupational levels, charging training fees is not a common practice, except when private (profit or non-profit making) institutions and agencies are the providers of the relevant services.

iv. **Voluntary Efforts**

Donations, grants and fund-raising activities can be an important source of funding for VET services, especially when such services are targeted to special groups of the population, including the handicapped and the underprivileged.

VIII. The Implementation Function

The role of the world of work in the implementation of VET programmes can be categorized into two main groups of activities. The first group is generally related to in-service training activities for those who are already employed. Such activities are usually of short- duration nature and include such variations as initiation training for newly appointed employees, re-training for new jobs and skills, and upgrading training to raise the competence of employees and enhance their productivity. The second group is related to pre-service education and training activities, such as formal and non-formal types of apprenticeship, aiming at the full preparation of labour for the needs of the enterprise through a programme of vocational education and training which, in this case, is usually of longer duration and a more comprehensive nature.

The positive role of the enterprise in the first category of in-service training activities for employees at all occupational levels has long been taken for granted, and employers are realising more and more how important it is to have a comprehensive policy for the development of the skills and abilities of their work force. The services and facilities needed for such in-service training activities can be provided either "in-house" by the enterprise itself, or by an external agency. It is in the field of the second category of pre-service vocational preparation programmes, to prepare skilled workers and craftsmen, that practices and judgements differ considerably, as shown earlier.

IX. Identification of Training Needs

The identification of training needs of the world of work is governed in general by economic considerations and production requirements with the objective of providing the labour force needed in the various fields and at the various levels; in addition to raising productivity, enhancing performance standards, and improving product quality. At the enterprise level, a comprehensive approach to the identification of training needs incorporates the following elements:

(i) Studying official and unofficial national policies of human resources development, as well as the provisions of socioeconomic development plans. This includes strategies, policies and plans related to education, employment, labour mobility and the expected surpluses and shortages in humanpower.

(ii) Identifying policies and objectives of humanpower development in the enterprise. Such policies should be explicitly or implicitly adopted or should have already been adopted by top management. They include sources of recruitment, extent of modernisation, promotion policies, modes of administrative structures and lines of authority.

(iii) Assessing the humanpower situation in the enterprise. An appropriate database would be of great value in this respect. The assessment of the huamnpower situation as it exists usually takes into consideration the quantitative and qualitative aspects. The quantitative aspects identify the number of employees in the various departments and administrative units at the various occupational levels. The qualitative aspects, on the other hand, identify the characteristics of the labour force including educational background, work experience, rates of turnover, age profiles, as well as performance standards and potentialities.

(iv) Assessing the humanpower needs of the enterprise. Such assessment also takes into consideration the quantitative and qualitative aspects that are of relevance. Of special importance are the plans for expansion of production activities, rates of labour turnover, modernisation and development plans, and division of labour policies.